

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims:

1-10. (Cancelled).

11. (Currently Amended) A method for adapting a Bayesian network, comprising:

generating a set of parameters for the Bayesian network in response to a set of past observation data such that the Bayesian network models an environment;
obtaining a set of present observation data from the environment;
determining an estimate of the parameters in response to the present observation data;

adapting a learning rate for the parameters such that the learning rate responds to changes in the environment indicated in-by the present observation data by increasing the learning rate when an error between the estimate and a mean value of the parameters is relatively large and decreasing the learning rate when convergences is reached between the estimate and the mean value of the parameters;

updating the parameters in response to the present observation data using the learning rate; and

using the Bayesian network to model the environment and diagnose problems or predict events in the environment.

12. (Previously Presented) The method of claim 11, wherein adapting comprises adapting a different learning rate for each parameter of the Bayesian network.

13. – 14. (Cancelled)

15. (Previously Presented) The method of claim 11, wherein a subset of values in the present observation data is unavailable when updating.

16. (Previously Presented) The method of claim 11, wherein the environment is an online environment.

17. (Previously Presented) The method of claim 16, wherein the online environment is an email system.

18. (Previously Presented) The method of claim 16, wherein the online environment is an e-commerce system.

19. (Previously Presented) The method of claim 16, wherein the online environment is a database system.

20. (Previously Presented) The method of claim 11, wherein updating comprises determining an initial set of the parameters and then updating the parameters in response to the present observation data using the learning rate.

21. (Currently Amended) A hardware system, comprising:

environment that generates a set of present observation data;

Bayesian network that performs automated reasoning for the environment in response to the present observation data;

adapter that obtains the present observation data from the ~~on-line~~ environment and that determines an estimate of a set of parameters for the Bayesian network in response to the present observation data by adapting a learning rate for the parameters to respond to changes in the environment by increasing the learning rate when an error between the estimate and a mean value of the parameters is relatively large and decreasing the learning rate when convergences is reached between the estimate and the mean value of the parameters, wherein the Bayesian network models the environment and diagnoses problems or predicts events in the environment.

22. (Currently Amended) The hardware system of claim 21, wherein the adapter uses a different learning rate for each parameter of the Bayesian network.

23. (Currently Amended) The hardware system of claim 21, wherein the adapter determines the parameters by determining an initial set of the parameters and then updating the parameters in response to the present observation data using the learning rate.

24. – 25. (Cancelled)

26. (Currently Amended) The hardware system of claim 21, wherein a subset of values in the present observation data is unavailable.

27. (Currently Amended) The hardware system of claim 21, wherein the environment is an email system.

28. (Currently Amended) The hardware system of claim 21, wherein the environment is an e-commerce system.

29. (Currently Amended) The hardware system of claim 21, wherein the environment is a database system.